

ADDITIONAL NOTES ON THE ERIOCAULACEAE. XXXIII

Harold N. Moldenke

MESANTHEMUM ERICI-ROSENII T. Fries

Additional bibliography: Moldenke, *Phytologia* 20: 269. 1970.

Material of this taxon has been misidentified and distributed in herbaria as M. radicans (Benth.) Körn.

Citations: LIBERIA: J. T. Baldwin 10052 (N). DEMOCRATIC REPUBLIC OF CONGO: Overlaet 807 (Mu). ZAMBIA: E. A. Robinson 6116 (Mu, Z); von Rosen 806 (B-isotype, Z-isotype).

MESANTHEMUM JAEGERII Jacques-Félix

Synonymy: Mesanthemum jaegeri Jacques-Félix apud Jaeger, Lamotte, & Roy, *Bull. Inst. Fond. Afr. Noire* 28: 1160. 1966.

Bibliography: Jacques-Félix, *Bull. Soc. Bot. France* 94: 146. 1947; E. J. Salisb., *Ind. Kew. Suppl.* 11: 157. 1953; Jaeger, Lamotte, & Roy, *Bull. Inst. Fond. Afr. Noire* 28: 1160--1161, fig. 7. 1966; Moldenke, *Résumé Suppl.* 18: 6. 1969.

Illustrations: Jaeger, Lamotte, & Roy, *Bull. Inst. Fond. Afr. Noire* 28: 1160, fig. 7. 1966.

According to Jaeger, Lamotte, & Roy (1966) this species grows in association with Impatiens jacquesii and Streptocarpus elongatus. It is known thus far only from Sierra Leone.

MESANTHEMUM PRESCOTTIANUM (Bong.) Körn.

Synonymy: Eriocaulon prescottianum Bong., *Mém. Acad. Imp. Sci. St. Pétersb., sér. 6*, 1: 632 & 635. 1831. Mesanthemum prescottianum Körn. apud Benth. & Hook. f., *Gen. Pl.* 3 (2): 1021. 1883.

Mesanthemum tuberosum H. Lecomte, *Bull. Soc. Bot. France* 55: 898--899. 1908.

Bibliography: Bong., *Mém. Acad. Imp. Sci. St. Pétersb., sér. 6*, 1: 632 & 635. 1831; Bong., *Ess. Monog. Erioc.* 11, 12, & 35. 1831; Steud., *Nom. Bot.*, ed. 2, 1: 585. 1840; Kunth, *Enum. Pl.* 3: 578, 579, & 614. 1841; D. Dietr., *Syn. Pl.* 5: 268. 1852; Steud., *Syn. Pl. Glum.* 2: [Cyp.] 282 & 334. 1855; Körn. in Mart., *Fl. Bras.* 3 (1): 283, 284, 471, 472, 500, 504, & 506, pl. 60, fig. 1. 1863; Benth. & Hook. f., *Gen. Pl.* 3 (2): 1021. 1883; Hieron. in Engl. & Prantl, *Nat. Pflanzenfam.*, ed. 1, 2 (4): 23 & 24, fig. 12 T. 1888; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 1, 1: 879 (1893) and 2: 214. 1894; Thiselet.-Dyer, *Fl. Trop. Afr.* 8: 261. 1901; Ruhl. in Engl., *Pflanzenreich* 13 (4-30): 22, 118, 287, & 288. 1903; H. Lecomte, *Bull. Soc. Bot. France* 55: 598--599. 1908; Prain, *Ind. Kew. Suppl.* 4, pr. 1, 153. 1913; Ruhl. in Engl. & Prantl, *Nat. Pflanzenfam.*, ed. 2, 15a: 50. 1930; Stapf, *Ind. Lond.* 4: 280. 1930; Hutchinson & Dalz., *Fl. W. Trop. Afr.* 2: 327. 1936; Moldenke, *Known Geogr. Distrib. Erioc.* 20, 21, 38, & 44. 1946; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 2, 1: 879 (1946) and 2: 214. 1946; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 111 &

207. 1949; Moldenke, *Phytologia* 3: 500. 1951; Meikle & Baldwin, *Am. Journ. Bot.* 39: 45, 47, & 50, fig. 9—18. 1952; Prain, *Ind. Kew. Suppl.* 4, pr. 2, 153. 1958; Moldenke, *Résumé* 136, 137, 291, 320, & 485. 1959; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 3, 1: 879 (1960) and 2: 214. 1960; Moldenke, *Résumé Suppl.* 4: 6 (1962) and 18: 13. 1969; Moldenke, *Phytologia* 20: 268. 1970.

Illustrations: Körn. in Mart., *Fl. Bras.* 3 (1): pl. 60, fig. 1. 1863; Hieron. in Engl. & Prantl, *Nat. Pflanzenfam.*, ed. 1, 2 (4): 23, fig. 12 T. 1888; Meikle & Baldwin, *Am. Journ. Bot.* 39: 47, fig. 9—18. 1952.

The original description of this species, according to Kunth (1841), is "Acaule; foliis lanceolatis, acuminatis, glabriusculis; pedunculo solitario vaginae pubescente". He places the species in his section "Eulepis: squamis capitulorum marginalibus radiantibus". A plate "36" is cited as illustrating this species by Bongard (1831) and other authors, but does not appear in the reprint of his work consulted by me. The same plate reference is given by Steudel (1855) and Jackson (1893), but Kunth (1841) says "ic. ined." after his citation of it and Stapf (1931) does not list it. Possibly it occurs only in the Leningrad library and/or herbarium. Bongard (1831) says for the type collection of his *Eriocaulon prescottianum* "Habitat prope Rio de Janeiro. (Ex herbario amiciss. D. Prescott, cui cel. Lindley)." Kunth (1841) and Steudel (1855) also record it as native to Rio de Janeiro, Brazil, which, of course, is entirely incorrect, since it does not occur in the New World at all.

Meikle & Baldwin (1952) report "thousands of plants on high granitic outcrop near Sanokwele", in Liberia. They report it also from Sierra Leone, and distinguish it from *M. radicans* as follows:

Inner involucre bracts obtuse, 5—8 mm. long; receptacle black-pilose.....*M. radicans*.
 Inner involucre bracts acuminate, 10—18 mm. long; receptacle white-pilose.....*M. prescottianum*.

Baldwin reports the plant as "common" in the Republic of Guinea. Recent collectors have found it on open rocky hills, at altitudes of 2000 to 2500 feet, flowering and fruiting in September and October.

Additional citations: LIBERIA: *J. T. Baldwin Jr.* 9516 (N). REPUBLIC OF GUINEA: *J. T. Baldwin Jr.* 9772 (N).

MESANTHEMUM PUBESCENS (Lam.) Körn.

Synonymy: *Eriocaulon pubescens* Lam., *Encycl. Méth.* 3: 276. 1789. *Eriocaulon pubescens* Lam. ex Steud., *Syn. Pl. Glum.* 2: [Cyp.] 272—273, sphalm. 1855. *Mesanthemum pubescens* Körn. ex Benth. & Hook. f., *Gen. Pl.* 3 (2): 1022. 1883. *Eriocaulon madagascariense* Pourr. ex Moldenke in Humbert, *Fl. Madag.* 36: 33, in syn. 1955 [not *E. madagascariense* Moldenke, 1951].

Bibliography: Lam., *Encycl. Méth.* 3: 276. 1789; Lam., *Tabl. Encycl. Méth.* 1: 213. 1791; Pers., *Syn. Pl.* 1: 111. 1805; Roem. &

Schult. in L., Syst. Veg., ed. 15 nov., 2: 866. 1817; Steud., Nom. Bot. Phan., ed. 1, 313. 1821; Spreng. in L., Syst. Veg., ed. 16, 3: 776. 1826; Bong., Ess. Monog. Erioc. 3, 4, & 16. 1831; Steud., Nom. Bot., ed. 2, 1: 585. 1840; Kunth, Enum. Pl. 3: 569 & 614. 1841; D. Dietr., Syn. Pl. 5: 265. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 272—273 & 334. 1855; Körn., Linnaea 27: 575—576. 1856; C. Müll. in Walp., Ann. 5: 922. 1860; Körn. in Mart., Fl. Bras. 3 (1): 471 & 472. 1863; J. G. Baker, Journ. Linn. Soc. Lond. Bot. 20: 279. 1883; Benth. & Hook. f., Gen. Pl. 3 (2): 1022. 1883; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 879 (1893) and 2: 214. 1894; Ruhl. in Engl., Pflanzenreich 13 (4-30): 118, 120, & 288. 1903; H. Lecoute, Bull. Soc. Bot. France 55: 573. 1908; Moldenke, Known Geogr. Distrib. Erioc. 22 & 44. 1946; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 879 (1946) and 2: 214. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 123 & 207. 1949; Moldenke in Humbert, Fl. Madag. 36: 31 & 33, fig. 4 (5—7). 1955; H. Hess, Bericht. Schweiz. Bot. Gesell. 65: 183. 1955; Moldenke, Résumé 156, 290, & 485. 1959; Moldenke, Résumé Suppl. 1: 10, 18, 19, & 25. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 879 (1960) and 2: 214. 1960; Moldenke, Phytologia 20: 8. 1970.

Illustrations: Moldenke in Humbert, Fl. Madag. 36: 31, fig. 4 (5—7). 1955.

Leaves erect-cespitose, ensiform, 18–21 cm. long, 7–11 mm. wide, pubescent or villous on both surfaces, sericeous with silvery hairs at the base; peduncles elongate, about 33 cm. long, surpassing the leaves, 10-costate, not twisted, covered with rather long bulbous-based spreading hairs, finally calvescent; sheaths short, villous; heads semiglobose, 11 mm. wide, flat and white-villous above; involucre bractlets broadly ovate, rigid, yellowish-stramineous, acute or obtuse at the apex, glabrous, slightly shorter than the flowers, the exterior ones gradually smaller; receptacular bractlets filiform-linear, white, claviform-dilated at the apex and there pilose on both surfaces with short spreading hairs; staminate florets: sepals 3, separate, cuneate-obovate, yellowish, rather thickly membranous, navicular, very obtuse at the apex, ciliate toward the apex, hirsute on the back; petal-tube oblong-campulate, solid toward the base, spongy-membranous and deeply hollowed-out above that, lightly 3-lobed, not involute, densely long-ciliate on the margins, linear-glanduliferous within; pistillate florets: sepals 3, separate, spatulate-oblong, fuscous, navicular, very obtuse and long-pilose or bearded at the apex; petals 3, finally equaling the sepals, free at the base, connate above, spatulate, white, pilose, glanduliferous, subtruncate and densely long-ciliate at the apex.

The type of this endemic species was collected by Philibert Commerson at Fort Dauphin, Madagascar, and is deposited in the Lamarck-Roeser herbarium at the Muséum National d'Histoire Naturelle at Paris. Körnicke (1856) assures us that he examined the type specimen ["v. frustulum classic."]. Another Commerson specimen in the same herbarium, also unnumbered, is mounted on

the same sheet with an unnumbered Pourret collection of Xyris sp. This appears to be the type of Eriocaulon madagascariense Pourr. Jackson (1894) erroneously dates Körnicke's work as "1854".

Kunth (1841) describes this plant as "Scapo subvillosa; foliis ensiformibus, pubescentibus, maximis; capitulo plano, tomentoso. Lam. — Madagascaria. — Folia plana, utrinque pubescentia, 7—8-pollicaris, basi pilis sericeis argenteis cincta. Scapus striatus, foliis longior, basi vagina brevi villosa instructus. Capitulum orbiculare, 5—6 lineas latum. Bracteae involucentes obovales, villosae, parum scariosae." Lamarck's original description was merely "E. scapo subvillosa, foliis ensiformibus pubescentibus maximis, capitulo plano tomentoso. Ex ins. Madagascariae. Fol. latitudine semi-pollicaria." There is no picture of it and Stapf (1930) cites no illustration from this work.

In Humbert's Flora of Madagascar (1955) the species is distinguished from the only other known species of the genus in Madagascar as follows:

Inner involucre bracts surpassing the disk; petals of the pistillate florets much longer than their sepals.....
M. rutenbergianum.

Inner involucre bracts slightly shorter than the disk; petals of the pistillate florets about equaling their sepals.....
M. pubescens.

Mesanthemum pubescens has been found growing in marshes and wet places in general, at altitudes of 1500 to 1600 meters, flowering and fruiting from January to September. The only common name recorded for it is "joncinelle pubescente".

Citations: MADAGASCAR: Baron 458 (P); Collector undetermined 3715 (V—8666); Commerson s.n. [Erioc. pubesc.] (N—photo of isotype, P—isotype, Z—photo of isotype), s.n. [Erioc. madag.] (P); Decary 17200 (N, P); Perrier de la Bâthie 2248 (P); Schlieben 8185 (Mu). MOUNTED ILLUSTRATIONS: drawings & notes by Körnicke (B).

MESANTHEMUM RADICANS (Benth.) Körn.

Synonymy: Eriocaulon radicans Benth. in Hook. f., Niger Fl. 547—548. 1849. Eriocaulon guineense Steud., Syn. Pl. Glum. 2: [Cyp.] 273 & 334. 1855 [not E. guineense Moldenke 1968 & 1970]. Mesanthemum radicans Körn., Linnaea 27: 573. 1856; Benth. & Hook. f., Gen. Pl. 3 (2): 1021. 1883. Eriocaulon giganteum Afzel. ex Körn., Linnaea 27: 573, in syn. 1856 [not E. giganteum Beauverd, 1909, nor (Beauverd) Beauverd, 1949]. Eriocaulon radians Hook. f. apud Benth. & Hook. f., Gen. Pl. 3 (2): 1021—1022 [as "Eriocauli radiantis sphalm. Hook. f."]. 1883. Mesanthemum radicans (Bong.) Körn. apud Hieron. in Engl. & Prantl, Nat. Pflanzenfam., ed. 1, 2 (4): 24, sphalm. 1888 [not M. radicans Stapf, 1959]. Eriocaulon radians Benth. apud Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 879, in syn. 1893.

Bibliography: Benth. in Hook. f., *Niger Fl.* 547—548. 1849; Walp., *Ann.* 3: 663 (1852) and 3: 1014. 1853; Steud., *Syn. Fl. Glum.* 2: [Cyp.] 273, 278, & 334. 1855; Körn., *Linnaea* 27: 573—575. 1856; C. Müll. in Walp., *Ann.* 5: 922. 1860; Körn. in Mart., *Fl. Bras.* 3 (1): 283, 284, 294, 298, 471, & 472. 1863; Benth. & Hook. f., *Gen. Pl.* 3 (2): 1021—1022. 1883; Hieron. in Engl. & Prantl, *Nat. Pflanzenfam.*, ed. 1, 2 (4): 24 & 27. 1888; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 1, 1: 878 & 879 (1893) and 2: 214. 1894; N. E. Br. in Thiseit.-Dyer, *Fl. Cap.* 7: 52, 58, & 781. 1897; Ruhl. in Engl., *Bot. Jahrb.* 27: 79. 1899; Thiseit.-Dyer, *Fl. Trop. Afr.* 8: 260. 1901; Ruhl. in Engl., *Pflanzenreich* 13 (4-30): 118—120, 285, 287, & 288. 1903; Stapf in H. Johnston, *Liberia* 2, app. 4: 662. 1906; Pax in Engl., *Bot. Jahrb.* 39: 609. 1907; H. Lecomte, *Bull. Soc. Bot. France* 55: 598. 1908; Thonn., *Blütenpfl.* pl. 15. 1908; Stapf, *Ind. Lond.* 4: 280. 1930; Ruhl. in Engl. & Prantl, *Nat. Pflanzenfam.*, ed. 2, 15a: 50. 1930; Hutchinson & Dalz., *Fl. W. Trop. Afr.* 2: 328, fig. 292. 1936; Dinklage in Fedde, *Repert. Sp. Nov.* 41: 243. 1937; Moldenke, *Known Geogr. Distrib. Erioc.* 20—22, 35, 39, 44, 61, & 62. 1946; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 2, 1: 878 & 879 (1946) and 2: 214. 1946; Moldenke, *Known Geogr. Distrib. Verberac.*, [ed. 2], 109, 111—115, 119, & 207. 1949; Moldenke, *Phytologia* 3: 500. 1951; Meikle & Baldwin, *Am. Journ. Bot.* 39: 44—45. 1952; Duvigneaud, *Lejeunia* 16: 103. 1953; Zinderenbakker, *S. Afr. Pollen* 1: 36. 1953; E. Müll., *Phytopath. Zeitschr.* 23: 109. 1955; H. Hess, *Bericht. Schweiz. Bot. Gesell.* 65: 139 & 179—182. 1955; Moldenke, *Résumé* 133, 135—138, 140, 142, 147, 288, 291, 320, & 485. 1959; Moldenke, *Résumé Suppl.* 1: 8—10, 19, & 25 (1959) and 2: 6. 1960; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 3, 1: 878 & 879 (1960) and 2: 214. 1960; Hegnauer, *Chemotax. Pfl.* 2: 153. 1963; [Wiltshire], *Rev. Appl. Myc. Ind. Fungi* 2: 355, 359, & Cum. Ind. 202. 1963; Thanikaimoni, *Pollen & Spores* 7: 182. 1965; Moldenke, *Résumé Suppl.* 17: 4 (1968) and 18: 13. 1969; Moldenke, *Phytologia* 18: 256, 258, & 303 (1969), 19: 458, 468, & 469 (1970), and 20: 267. 1970.

Illustrations: Thonn., *Blütenpfl.* pl. 15. 1908; Hutchinson & Dalz., *Fl. W. Trop. Afr.* 2: 328, fig. 292. 1936.

This species is actually based on Ansell s.n. from Grand Bassa, Curror s.n. from "south of the Line", and G. Don s.n. from Sierra Leone. Eriocaulon giganteum Afzel is based on Afzelius s.n. from Sierra Leone, deposited in the Berlin and Stockholm herbaria. The homonyms of this binomial, listed above, are in the synonymy of Eriocaulon beauverdi Moldenke; Eriocaulon guineënsis Moldenke is a synonym of E. toumouense Moldenke, while Mesanthemum radicans Stapf belongs in the synonymy of Eriocaulon latifolium J. Sm.

Bentham & Hooker (1883), as noted above, list as a synonym an "Eriocauli radiantis, sphalm. Hook. f. *Fl. Nigr.* 547", but in the Hooker work the cited reference has the binomial of this taxon plainly written as "Eriocaulon radicans Benth." Jackson (1894)

erroneously dates Körnicke's work as "1854".

Recent collectors have found this plant growing in open marshy areas on savannas "and elsewhere" with Xyris decipiens as an associate, at altitudes of 600 to 1500 meters, flowering and fruiting from January to June, August, October, and November. Robinson describes the plant as an "erect annual", stems and leaf-bases more or less succulent". Müller (1955) records the fungus, Sorosporium mesanthemi E. Müll. from the inflorescence of this species in Angola.

Hess (1955) tells us that "Mesanthemum radicans ist wohl von Brown (1901) am genauesten beschrieben worden. Durch die Untersuchung eines umfangreichen Materials aus Afrika wurde er veranlasst, im Anhang zur Diagnose auf die Variabilität von Merkmalen hinzuweisen. So fand er, dass die Länge der Sepalen der ♀ Blüten zwischen $1/3$ und $3/4$ der Länge der Petalen schwankt. Weiter beobachtete er, dass der Rand der Spitze dieser Sepalen fein gezähnt oder behaart sei. Immer fand er zwischen den Extremen Übergänge, die ihn veranlassten, keine systematischen Trennungen vorzunehmen.

"Die Untersuchung des eigenen Materials, das von 3 Fundorten im unteren Belgischen Kongo und dem benachbarten Nordangola sowie von 9 Fundorten aus dem Süden von Angola stammt, hat die von Brown angegebene Variationsbreite der oben erwähnten Merkmale bestätigt. Dagegen fand ich einen konstanten Unterschied zwischen der Gruppe aus Südangola und den Vertretern aus dem Belgischen Kongo und dem angrenzenden Nordangola: Die Hüllbrakteen der Pflanzen aus dem Kongo (nebst den eigenen Sammlungen habe ich die Nummern 115, 3151, 5001, 5006 von V. Coosens, die im Botanischen Museum der Universität Zürich liegen, einbezogen) und aus Nordangola sind immer auf dem Rücken angedrückt behaart, während diese Brakteen an den Pflanzen aus dem Süden von Angola (es wurden die Nummern 302 und 645 von Baum, die ebenfalls im obgenannten Museum liegen, mituntersucht) auf dem Rücken ausnahmslos vollständig kahl sind. Andere konstante Unterschiede sind nicht gefunden worden. Zuerst schien es, als ob die Sepalen der ♂ Blüten an der Gruppe mit behaarten Brakteen stets kürzer seien (nur $1/3$ bis $1/2$ so lang wie die Petalen), doch hat sich gezeigt, dass an Pflanzen mit kahlem Brakteen gelegentlich ebenso kurze Sepalen vorkommen. Es liegen aber sicher zwei getrennte Rassen vor, doch möchte ich mit einer Beschreibung zuwarten bis ich experimentell zu klareren Ergebnissen bin. Es ist noch zu erwähnen, dass aus dem Süden von Angola 45 Pflanzen und aus dem Kongo und Nordangola 31 Pflanzen miteinander verglichen werden konnten.

"Zur Diagnose von Brown ist nachzutragen, dass die Pflanzen immer ein deutliches, senkrecht bis horizontales Rhizom entwickeln, das mit Faserwurzeln und abgestorbenen Blattresten bedeckt ist." He cites the following collections: ANGOLA: Bié: H. Hess 52/514, 52/614, 52/638, 52/669, 52/670, 52/671, 52/2059, 52/2088. Congo: H. Hess 52/1288, 52/1289. Huila: H. Hess 52/746. DEMOCRATIC REPUBLIC OF CONGO: H. Hess 50/297.

Hess also tells us that "Mesanthemum radicans wächst an Quellhorizonten, an Bächen und Flüssen (gelegentlich sogar mit submersen Blättern) auf sandigem, sandig-moorigem, durchnässtem oder wenig Zentimeter tief überschwemmtem Boden. Also häufiger Begleiter ist Eriocaulon pictum Fritsch zu nennen. Am Rio Cuevi kommt noch E. lanatum H. Hess hinzu."

After discussing the many variations shown in his collections, this splendid worker continues "Diese Angaben zeigen, dass bei der Untersuchung von Mesanthemum radicans nur auf die Blüten abgestellt werden kann, die in der Länge und Behaarung der Sepalen (es betrifft dies nur die ♀ Blüten) ebenfalls eine beträchtliche Variationsbreite besitzen....Mesanthemum radicans ist in West-Afrika vom Süden von Angola bis hinauf nach Französisch West-Afrika verbreitet....Mesanthemum radicans ist sehr nahe verwandt mit dem madagassischen M. Rutenbergianum Körn. Zu Vergleichszwecken lag mit Material von Hildebrandt, Nr. 3714, gesammelt im November 1880 bei Andrangoloaka, Ost-Imerina, Madagaskar, vor. Das Muster liegt im Botanischen Museum der Universität Zürich. Als einzige Unterschiede fand ich bei M. Rutenbergianum braune Sepalen (nicht schwarze, wie in der Literatur angegeben). Bei M. radicans sind die Sepalen durchwegs hellgelb oder weisz. Weiter sind die Brakteen der Blüten an der Spitze mehr verbreitert und tragen dichteren und auch etwas längeren Haarschopf als M. radicans. Die Länge der Blütenstiele stimmt mit M. radicans überein. Jacques-Félix (1947) hat bereits auf den Fehler in der Abbildung bei Ruhland (1903) hingewiesen und die Blütenstiele in seiner Arbeit richtig gezeichnet.

"Nach meiner Ansicht handelt es sich bei Mesanthemum radicans und M. Rutenbergianum aber doch um zwei getrennte Arten. Um M. Rutenbergianum sind noch verschiedene Arten gruppiert, deren systematischer Wert sehr zweifelhaft ist. Es sind dies M. Roseni Pax, M. Erics-Roseni T. Fries und M. pubescens Körn. Sie sind auf kleine Abweichungen gegründet, die allgemein eine grosse Variationsbreite haben, wie die Länge der Blütenstiele, Länge und Behaarung der Sepalen and Grösze, Form und Behaarung der Blätter. Eine Revision dieser Gruppe ist notwendig; doch ist sie nur sinnvoll, wenn von den verschiedenen postulierten Arten ein umfangreiches Material vorhanden ist."

Zinderenbakker (1953) cites P. J. Greenway 5393 from Tanganyika. Meikle & Baldwin (1952) cite from Liberia Ansell s.n., J. T. Baldwin Jr. 10052, 11160, & 12056, Linder 44 & 350, and W. Whyte s.n. Of these, the Ansell collection is a cotype of M. radicans, but I regard J. T. Baldwin Jr. 10052 as M. erici-rosenii T. Fries. They note that M. radicans is "A common species in many parts of West Tropical Africa". They differentiate the two species of the genus known to them from Liberia as follows:
Inner involucre bracts obtuse, 5—8 mm. long; receptacle black-pilose.....M. radicans.

Inner involucre bracts acuminate, 10--18 mm. long; receptacle white-pilose.....M. prescottianum.

Material of M. radicans has been misidentified and distributed in herbaria as M. erici-rosenii T. Fries and as Xyris sp. On the other hand, the J. T. Baldwin Jr. 10052 and Overlaet 807, distributed as M. radicans, are actually M. erici-rosenii T. Fries, while Hildebrandt 3714 is M. rutenbergianum Körn. and Stuhlmann 9143 is the type collection of Eriocaulon mesanthemoides Ruhl.

Citations: MALI: Senegambia: Perrottet s.n. (B). SÉNÉGAL: Perrottet 808 (S). SIERRA LEONE: Afzelius 10.1 (S), 10.2 (S), 10.3 (S), s.n. (B). LIBERIA: J. T. Baldwin Jr. 12056 (N); Mrs. O. F. Cook 130 (W--270508); DeWilde & Voorhoeve s.n. [DeWilde 3787] (S); Dinklage 1627 (B); E. H. L. Krause 3491 (B); Straub 3 (W--945920), 856 (W--1991584). NIGERIA: Southern: Barter 2201 (N). CONGO BRAZZAVILLE: Håkanson s.n. [29/9/1931] (S). PORTUGUESE CONGO: Gossweiler 9153 (N, N--photo). DEMOCRATIC REPUBLIC OF CONGO: Goossens 3151 (S), 5006 (S); Soyaux 104 (Mu--372); Vanderyst 1914 (S), 15979 (Ca--28022), 31004 (B), 31981 (S), 33338 (S), 33352 (N), 33568 (S), 33801 (S). TANZANIA: Tanganyika: Stuhlmann 1064 (B). ZAMBIA: E. A. Robinson 3647 (Mu).

MESANTHEMUM REDUCTUM H. Hess

Bibliography: H. Hess, Bericht. Schweiz. Bot. Gesell. 65: 178--180 & 183--185, fig. 1--3. 1955; Anon., Assoc. Etud. Tax. Fl. Afr. Trop. Index 1955: 30. 1956; Moldenke, Résumé 147 & 485. 1959; G. Taylor, Ind. Kew. Suppl. 12: 90. 1959; Moldenke, Phytologia 20: 267 & 268. 1970.

Illustrations: H. Hess, Bericht. Schweiz. Bot. Gesell. 65: 179, fig. 1--3. 1955.

The type of this species is H. Hess 52/2106, collected in the Rio Quiriri 20 km. eastward from Longa, at an altitude of 1290 meters, Bié, Angola, on June 29, 1952. Thus far this is the only known collection of the species, of which Hess (1955) says: "Mesanthemum reductum besiedelt in Herden den Grund und die Unterwasserböschungen des Flusses. Das Wasser fließt rasch; der Boden besteht aus weissem Quarzsand. Die Pflanzen wurden in der Mitte der Trockenzeit aus 1--2 m. Wassertiefe geholt; sie entwickeln sich also bis zur Fruchtreife submers und ragen nie über Wasser. Als Begleiter wurden Limnanthemum-Arten und Nymphaea sulphurea Gilg notiert. Andere Standorte sind nicht bekannt....Nur von der oben angegebenen Fundstelle bekannt. Dürfte im Rio Quiriri häufig sein.....Systematisch und ökologisch ist Mesanthemum reductum isoliert. Die Reductionerscheinungen in der Blüte sind bei keiner anderen Mesanthemum-Art so weit fortgeschritten. M. albidum H. Lec. besitzt in den ♂ Blüten noch Sepalen; sie war bisher die einzige Art mit Rückbildungen in den Blüten. Die beiden Arten stehen sich aber morphologisch nicht nahe. Weiter ist noch

keine andere Art dieser Gattung bekannt, die sich submers entwickelt."

MESANTHEMUM ROSENI Pax

Bibliography: Pax in Engl., Bot. Jahrb. 39: 609. 1907; Prain, Ind. Kew. Suppl. 4, pr. 1, 153. 1913; H. Hess, Bericht. Schweiz. Bot. Gesell. 65: 183. 1955; Prain, Ind. Kew. Suppl. 4, pr. 2, 153. 1958; Moldenke, Résumé 135 & 485. 1959.

The type and only known collection of this species was gathered by Felix Rosen — in whose honor it is named — in a turf-bog at Aki, at an altitude of 2625 meters, in Mescha, West Schoa, Ethiopia. Concerning it Pax (1907) says: "Verwandt mit M. Rutenbergianum Koern.....von Madagaskar, weniger mit M. radicans Koern. Letztere besitzt lang gestielt ♂ Blüten. Von der malagassischen Spezies unterscheidet sich M. Roseni durch die relativ kurzen Schäfte, die Gestalt der Hochblätter im Köpfchen und die eingeschlechtlichen Inflorescenzen. Die lebende Pflanze beschreibt Rosen: 'Schwammig, sukkulent, lebhaft grün. Blätter in der Tracht an Stratiotes erinnernd. Köpfchen rein weiss.'"

Citations: MOUNTED DESCRIPTIONS: Pax in Engl., Bot. Jahrb. 39: 609 (B).

MESANTHEMUM RUBRUM Moldenke

Bibliography: Moldenke, Résumé Suppl. 4: 6. 1962; Moldenke, Phytologia 8: 390—391. 1962; Hocking, Excerpt. Bot. A. 6: 455. 1963; Anon., Assoc. Etud. Tax. Fl. Afr. Trop. Index 1962: 29. 1963; Moldenke, Biol. Abstr. 42: 1517. 1963; G. Taylor, Ind. Kew. Suppl. 14: 86. 1970.

Citations: REPUBLIC OF GUINEA: Chillou 1835 (Z--type).

MESANTHEMUM RUTENBERGIANUM Körn.

Synonymy: Mesanthemum platyphyllum J. G. Baker, Journ. Linn. Soc. Lond. Bot. 20: 278. 1883. Mesanthemum rutenbergianum Körn. ex H. Lecomte, Bull. Soc. Bot. France 55: 573. 1908.

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Illustrations: Ruhl. in Engl., Pflanzenreich 13 (4-30): 119, fig. 16. 1903; Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 47, fig. 18. 1930; Moldenke in Humbert, Fl. Madag. 36: 31, fig. 4 (1-4). 1955.

Leaves cespitose, linear-lanceolate, 18-26 cm. long, about 3.5 cm. wide at the base, 2-3 cm. wide at the midpoint, gradually narrowed upwards from the very broad base, obtuse and barbate at the apex, soon becoming glabrous, rather rigid, many-striate, not pellucid; peduncles subterete or many-striate, stout, 30-48 cm. long, about 1.3 mm. thick, slightly twisted, yellow-green, glabrous except for the puberulous apex; sheaths close, 11-20 cm. long, glabrous except for the ciliate mouth, shortly and obliquely split, the mouth widened, the blade rather rigid, lanceolate-ovate, rather elongated, entire, acuminate at the apex; heads hemispheric, 1.3-1.7 cm. wide, white-villous, flat above; involucre bractlets broadly ovate, rigid, obtuse at the apex, yellow-green, the outer ones glabrate, the inner ones densely white-puberulent especially at the apex and along the margins on the inner surface; receptacle black-pilose; receptacular bractlets filiform, brownish-white, dilated and densely pilose at the apex; staminate florets: sepals 3, scarcely connate at the base, cuneate-obovate, dark-olivaceous, very obtuse at the apex, pilose at the top of the back and along the upper margins; petal-tube glabrous except for the ciliate margin; pistillate florets: sepals 3, separate, spatulate-obovate, dark-olivaceous, concave, more than twice as long as the ovary, obtuse at the apex, glabrous except for the ciliate apex; petals 3, longer than the sepals, connate toward the apex, separate below, narrowly spatulate-oblong, very obtuse at the apex, pilose at the apex, linear-glanduliferous above the middle, whitish, darker at the base.

The type of this endemic Madagascar species was collected by Rutenberg near Lake Alaotra, Madagascar, in December of 1877. The type of M. platyphyllum is Baron 1863 from Vakinankaratra, Madagascar. According to Terrac (1947) this species is employed medicinally by the natives, who take the leaves cooked with rice during their pregnancy in order to avoid any accidents during the period of confinement. This decoction is also employed by them as a sedative, as an astringent in cases of diarrhea, and as an aromatic. According to Humbert's Flora (1955) the plant grows in "Marais, tourbières, clairières humides en forêt, bords de ruisseaux", from 1000 to 1600 meters altitude, flowering from August to March "et peut-être toute l'année". The Baker reference (1883) is sometimes erroneously cited as "1893".

The Madagascar species of this genus may be distinguished as follows:

Inner involucre bractlets surpassing the disk; petals of the pistillate florets much longer than the sepals.....

M. rutenbergianum.

Inner involucre bractlets slightly shorter than the disk; petals of the pistillate florets about equaling the sepals.....

M. pubescens.

Material of M. rutenbergianum has been misidentified and dis-

tributed in herbaria as M. radicans (Benth.) Körn.

Additional citations: MADAGASCAR: Alleizette s.n. (P); Baron 1863 (N—photo, P, P, Z—photo), s.n. (P); Decary 5015 (P), 13540 (P), 15106 (N, P, P); Hildebrandt 3714 (B, Mu—384, P); Lamyre de Vilers s.n. [1889] (P); Perrier de la Bâthie 13545 (P), 13985 (P), 16949 (P); Viguiet & Humbert 1691 (P), 1802 (P).

PAEPALANTHUS Mart.

Synonymy: Dupatya Vell., Fl. Flum. 35, nom. rejic. 1825.

Papulanthus Mart. ex Steud., Nom. Bot., ed. 2, 1: 586, in syn. 1840. Cladocaulon G. Gardn. in Hook., Icon. Pl. 6: pl. 528. 1843. Limnoxeranthemum Salzm. ex Steud., Syn. Pl. Glum. 2: [Cyp.] 281, in syn. 1855. Lasiolapis Bock. [in part], Flora 56: 90. 1873 [not Lasiolapis Benn., 1838]. Paepalantuhs Huber, Bol. Mus. Para. 2: 499, sphalm. 1898. Dupata Gleason, Bull. Torr. Bot. Club. 52: 195, sphalm. 1925. Paepalantus Alv. Silv., Fl. Mont. 1: 60 & pl. 15, sphalm. 1928. Paepalanthus Alv. Silv., Fl. Mont. 1: 77, sphalm. 1928. Paepalanthus Alv. Silv., Fl. Mont. 1: 53, sphalm. 1928. Eriocaulon Auct. [in part] apud Stapf, Ind. Lond. 3: 90, in syn. 1930 [not Eriocaulon Gron., 1753, nor Juss., 1810, nor L., 1753]. Poepalanthus Cuatrecasas, Revist. Acad. Colomb. Cienc. 10: 255, sphalm. 1958. Paepalanthus Kunth apud Rickett & Stafleu, Taxon 8: 232. 1959. Limnoxeranthemum "Salzm. ex Steud." apud Airy Shaw in Willis, Dict. Flow. Pl., ed. 7, 656. 1966. Paepalanthus Ruhl. ex Acosta Solis, Divis. Fitogeogr. Ecuad. 89, sphalm. 1968. Paepalanthus Kunth ex Moldenke, Résumé Suppl. 16: 25, in syn. 1968. Paepallanthus Onishi ex Moldenke, Résumé Suppl. 18: 13, in syn. 1969.

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It should be noted that almost all authors have credited the

generic name, Paepalanthus, to Martius (1835), including Kunth (1841), Lindley (1846), Bentham & Hooker (1883), and Jackson (1894), but Rickett & Stafleu (1959) maintain that it must now be credited to Kunth! In this they are followed by Airy Shaw (1966). Kunth (1841), however, definitely and plainly accredits the name to Martius! The argument advanced by Rickett & Stafleu is that "Paepalanthus 'Martius' was conserved for P. lamarckii Kunth (1841).

This species, however, is not included in Paepalanthus Martius (1835). The authority for the conserved name should be changed to accord with the type. It is not clear whether Paepalanthus Martius (1835) is accepted as a genus by the author or not. However, the conservation implies that the name has to be definitely accepted as validly published." In my opinion, this illustrates again the unfortunate difficulties which may arise when the principle of conservation of later names is accepted. If Dupatya, the earliest generic name applied to the group, were adopted, as principles of fairness unequivocally dictate, such legal maneuvering with its resulting confusion would not arise.

The genus Stephanophyllum Guill. is included in the synonymy of Paepalanthus by Jackson (1894) and, amazingly, by Airy Shaw (1966), but all of the species supposedly proposed in this genus are true members of the genus Leiothrix Ruhl., so the name can only go into the synonymy of the latter genus. The genus Lasiolipsis Böck. is in part Paepalanthus and in part Eriocaulon; in fact, two of the three species proposed in this genus are members of the genus Eriocaulon and only one is a Paepalanthus. The homonymous genus Lasiolipsis of Bennett is a synonym of Harrisonia R. Br. in the Rutaceae.

It should be mentioned here that the Lecomte (1908) reference in the bibliography above is cited as "1909" by Meikle & Baldwin (1952), the Müller (1860) reference is sometimes erroneously cited as "1858", and the Steyermark (1968) reference is sometimes cited in error as "1969". The Böckeler (1873) reference is sometimes cited as page "9" instead of "90"; the Silveira (1918) is sometimes cited to Löfgren, but the latter was only the editor, not the author; and the Niederlein (1890) reference is sometimes written "Bol. Mus. Prod. Argent. 31: 68. 1890" in some bibliographies. Böckeler's work (1873) is erroneously cited as volume "41" in Phytologia 1: 331 (1939) instead of volume "56". Ruhland (1903) mistakenly dates the Mantissa of Roemer & Schultes (1824) as "1817".

It should also be noted here that Sections III and IV of Eriocaulon, as considered by Steudel (1855), really belong in the genus Paepalanthus. It is most unfortunate that the present edition of the International Rules of Botanic Nomenclature forces us to use the generic name Paepalanthus instead of the name Dupatya, which was validly published ten years earlier (in actuality) or 16 years earlier if Kunth is to be given credit for it instead of Martius! The accepted name is taken from the Greek,

πικριπύλη and αΐθος, meaning "mealy flower", since many species have white-villous flower-heads. It is a complex genus of (as presently recognized) 572 species, subspecies, varieties, and named forms, widespread in tropical America, with its probable center of distribution in Minas Gerais, Brazil; one species also in Africa and Madagascar.

The type species of the genus originally was Eriocaulon corymbosum Bong. [= Paepalanthus corymbosus (Bong.) Kunth]. Under the present edition of the International Rules, however, the type has arbitrarily been changed to Paepalanthus lamarckii Kunth, based on Eriocaulon fasciculatum Lam. (1789), not E. fasciculatum Rottb., 1778.

The genus as a whole may be described in abbreviated fashion as follows: Annual or perennial herbs or subshrubs, the stems and branches very variable, from obsolete to woody and up to 2 m. long; leaves usually narrow, often grass-like, thin-membranous to thick-coriaceous, usually not fenestrate, entire, usually flat, sessile, more or less venose with few to many parallel veins, often rosulate at the base of the plant, often imbricate on stems and branches, sometimes deciduous, exstipulate; inflorescence capitate, axillary or terminal, often scapose; heads solitary or umbellate, sessile or subsessile to (usually) long-pedunculate, mostly white, sometimes gray, yellow, brown, or black, mostly villous, mostly less than 2 cm. wide; peduncles very slender or filiform, mostly stramineous, sheathed at the base, often greatly elongate, mostly several-costate and -sulcate, often more or less twisted, glabrous and shiny to variously pubescent; involucre usually conspicuous, its bractlets in few to many imbricate series, variously colored, smooth and shiny to ciliolate or variously pubescent; receptacle usually pilose; receptacular bractlets present; florets mostly polygamous, 2- or 3-merous; perianth (perigonium) double and involute; staminate florets with the sepals more or less connate toward the base, the petals connate into a membranous, hollow, glabrous (or rarely pilose within), slightly 2- or 3-lobed, non-glanduliferous, infundibular tube, which is finally almost always involute at the apex; stamens the same number as the petals (2 or 3) and opposite them, exerted during anthesis; anthers 4-celled, each composed of two thecae; and in the center a doubly or triply papillose rudimentary pistil; pistillate florets with the sepals usually connate at the very base and becoming rigid in age; petals free and non-glanduliferous; ovary 2- or 3-celled, the style-appendages mostly 2 or 3, papillose at the apex, inserted at about the same height as the stigmas and placed between them, the stigmas simple or more often bifid; the hairs of the receptacular bractlets and perigonium usually granulose within, almost always clavate-obtuse at the apex, often tuberculate.

The original description given by Kunth (1841) should be repeated here for comparison with that just given above since this is the description on which the "conserved" name is now based: "Eriocauli species auct. Flores capitati, androgyni, rarius di-

oeci, singuli bractea stipati, nunc centrales masculi, marginales feminei, nunc masculi femineis intermixtis (fide descr. Bong.); illi longiuscule pedicellati; calyx duplex, uterque subregularis; exterior trisepalus; sepala distincta, lateralia carinata, posticum (a bractea aversum) planiusculum; interior infundibularis, limbo 3 lobus, lobis plerumque involutis, interdum in sepala 3 magis minusve distincta dissolutus; tubus farctus. Stamina 3, calycis interioris limbo inserta, hujus lobis opposita, exserta. Antherae biloculares, introrsae. Pistilla 3 rudimentaria in centro summi tubi calycis interioribus. Flores deminei sessiles vel pedicellati; calyx duplex, uterque trisepalus, subregularis, persistens. Stamina effeta nulla. Ovarium sessile, tricoccum, pistillis 3 effetis distinctis, ex ejus centro prodeuntibus superatum; coccis uniovulatis. Stylus brevis vel bifida, pistilla effeta cingentia et cum his alternantia. Capsula tricocca, loculicide dehiscens. Semina plerumque costulata. Herbae hygrophilae, acaules vel caulescentes, interdum suffrutescentes. Folia angusta, integerrima, plana, nervosa. Capitula pedunculata, bracteis vacuis involucrata; pedunculi basi vaginati, solitarii vel umbellati, in acaulibus scapiformes, simplices et monocephali, rarius apice corymboso-pleiocephali. Vaginae integrae. Receptaculum pilosum (semper?). Flores interdum diandri, digyni, tunc calyx uterque disepalus." His genus Paepalanthus, of course, included species which we now call by that name as well as species of Leiothrix and Syngonanthus. He comments that Paepalanthus in his sense differs from Lachnocaulon only in that the latter genus has "antheris unilocularibus calyceque interiore femineo ad pilos creberrimos, ovarium cingentes redacto, masculo nullo".

Gleason, in his unpublished flora of Guyana, describes Paepalanthus as "Flowers 3-merous (in Guiana species); sepals distinct; petals of the staminate flowers more or less connate, of the pistillate flowers free; stamens 3; style mostly short, bearing 3 appendages inserted at the same level as the 3 erect, usually bifid stigmas. Stems abbreviated with rosulate or cespitose leaves, or elongate with scattered leaves; peduncles sheathed at base; heads small, densely hairy, globose or depressed to short-cylindric. (More than 200 species, chiefly in northern South America and Brazil)." He distinguished the Guyana species known to him as follows:

1. Leaves all rosulate, whorled, or densely cespitose.
2. Leaves thin and flexuous, 6--12 cm. long.
 3. Leaves 0.5 mm. wide; petals of the pistillate flower spatulate, glabrous.....P. capillaceus.
 - 3a. Leaves 1--2 mm. wide; petals of the pistillate flower subulate, densely hirsute.....P. jermani.
- 2a. Leaves thick and rigid, 2--4 cm. long.
 4. Leaves about 1 mm. wide; bracts black, spreading or reflexed, exceeding the heads.....P. roraimae.
 - 4a. Leaves 2--3 mm. wide; bracts closely appressed, shorter than the heads.....P. fraternus.

- 2b. Leaves filiform, soft, 1--2 cm. long; heads 2--3 mm. in diameter.....P. subtilis.
- 1a. Leaves scattered along the stem, frequently more crowded distally.
5. Stem freely and subdichotomously branched; leaves less than 10 mm. long.
6. Heads nearly or quite sessile, nearly concealed among the erect imbricate leaves.....P. guianensis.
- 6a. Heads on peduncles 1--3 cm. long; leaves spreading.....
P. dichotomus.
- 5a. Stem simple or nearly so.
7. Leaves ensiform-linear, 5--10 mm. wide, shining.....
P. subcaulescens.
- 7a. Leaves narrowly linear, rarely more than 2 mm. wide.
8. Lowest flowers reflexed over the bracts and concealing them.
9. Heads subglobose and depressed, blackish; peduncles glabrous or nearly so.....P. lamarckii.
- 9a. Heads globose, becoming short-cylindric, pale-brown; peduncles thinly villous with long hairs.....
P. fasciculatus.
- 8a. Lowest flowers not reflexed, the bracts conspicuous.
10. Principal bracts obovate, acute or obtuse.....
P. subtilis.
- 10a. Principal bracts linear-lanceolate, acuminate.....
P. bifidus.

It should be borne in mind that the P. jenmani of this key is now known as Carptotepala jenmani (Gleason) Moldenke and P. roraimae is now known as Rondonanthus roraimae (Oliv.) Herzog. Also, in the years since Gleason prepared this key, many additional taxa have been found in Guyana, including P. brunneus Moldenke, P. capillaceus var. proliferus Gleason, P. capillaceus var. spiralis Moldenke, P. filipes Moldenke, P. gleasonii Moldenke, P. griseus Moldenke, P. leucocyaneus Tutin, P. lilliputianus Moldenke, P. pauper Moldenke, P. perploxans Moldenke, P. plantaginioides (Hamilt.) Körn., P. roraimensis Moldenke, P. schomburgkii Klotzsch, and P. tatei Moldenke.

Vernacular names applied to members of the genus Paepalanthus as a whole in Brazil, where the group is most abundant, are "capipoatinga", "pepalanto", and "sempreviva da terra". The E. W. Nelson 3235, distributed to herbaria as Paepalanthus sp., is actually Eriocaulon ehrenbergianum Klotzsch.

PAEPAANTHUS ACANTHOLIMON Ruhl.

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1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 207. 1949; Moldenke, Résumé 94 & 485. 1959.

This species is based on W. Schwacke 6711, collected in the Serra de Caparaó, Minas Gerais, Brazil, in the flowering condition in February, 1890, and is deposited in the herbarium of the Botanisches Museum at Berlin. Silveira (1928) cites A. Silveira 598 from Caraça, in the same state, collected in 1911. Mrs. Chase describes the species as forming mats in the open campo on a stony slope above timberline, at an altitude of 2000—2100 meters.

Citations: BRAZIL: Minas Gerais: M. A. Chase 9726 (W—1282206); Schwacke 6711 (B—type, Z—istotype).

PAEPALANTHUS ACANTHOPHYLLUS Ruhl.

Bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 3, 6, 9, 184, 186, 189, & 289, fig. 1 G & 24. 1903; Prain, Ind. Kew. Suppl. 3: 126. 1908; Lützelb., Estud. Bot. Nordeste 3: 148. 1923; Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 42 & 52. 1930; Stapf, Ind. Lond. 4: 518. 1930; Moldenke, Known Geogr. Distrib. Erioc. 9 & 44. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 207. 1949; Moldenke, Phytologia 3: 501. 1951; E. Y. Dawson, Los Angeles Co. Mus. Contrib. Sci. 7: 5. 1957; Moldenke, Résumé 94 & 485. 1959; Rennó, Levant. Herb. Inst. Agron. 69. 1960; Moldenke, Résumé Suppl. 8: 2. 1964.

Illustrations: Ruhl. in Engl., Pflanzenreich 13 (4-30): 6 & 186, fig. 1 G & 24. 1903.

This species was based by Ruhland (1903) on Glaziou 22323, collected in sand between Rio Socho and Sobradinho, Goiás, Brazil, deposited in the herbarium of the Botanisches Museum at Berlin. He says of it "Species caule longo, rigido, simplici, dense foliis brevibus, pungentibus, rigidissimis, patentibus, aequalibus oblecto valde insignis et facillime dignoscenda". In spite of this statement, it seems to me that the Glaziou 19977, cited by Ruhland in another portion of his same monograph as a cotype of P. speciosus var. glaber Ruhl., is actually P. acanthophyllus, as are also at least the Brussels and New York specimens of Glaziou 22322. In the latter instance the confusion may be due to carelessness in copying labels, since the very next number, Glaziou 22323, is the type collection of P. acanthophyllus. Macbride photographed an isotype in the Copenhagen herbarium as his type photograph number 22276.

Lützelburg (1923) records the species from the Serra de Ituhita in central Bahia where, he says, it is typical of the cerrado and constitutes ten percent of the total vegetation. Dawson found it growing in the wet sandy margins of sandstone outcrops, while Irwin and his associates describe it as 1 meter tall, with very light-gray flowering heads, growing in wet sand in the campos adjacent to cerrado with outcrops, at 1000 meters altitude. It has been collected in anthesis from March to May. Material has been distributed in herbaria misidentified as P. speciosus var. glaber Ruhl. and P. speciosus var. glabra Ruhl.

Additional citations: BRAZIL: Brasília Federal District: Murça Pires, Silva, & Souza 9402 (B). Goiás: E. Y. Dawson 14615 (Z); Glaziou 22319 (B), 22322, in part (Br, N), 22323 [Macbride photos 22276] (B—type, N—photo of isotype, W—photo of isotype, Z—isotype); Irwin, Reis dos Santos, Souza, & Fonseca 24649 (Ac). Minas Gerais: Glaziou 19977 (B, Br, C); Heringer & Castellanos 6084 (B), 6141 (B); Mello Barreto 1047 [Brade 14478; Herb. Jard. Bot. Rio Jan. 28455] (B), 2487 [Herb. Jard. Bot. Belo Horiz. 8237] (N); L. B. Smith 7075 (N, W—2120226).

PAEPALANTHUS ACCRESCENS Alv. Silv.

Bibliography: Alv. Silv., Fl. Mont. 1: 96—98 & 400, pl. 62 & 63 [a]. 1928; A. W. Hill, Ind. Kew. Suppl. 9: 199. 1938; Worsdell, Ind. Lond. Suppl. 2: 182. 1941; Moldenke, Known Geogr. Distrib. Erioc. 9 & 44. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 207. 1949; Moldenke, Résumé 94 & 485. 1959.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 63 [a]. 1928.

This species is based on A. Silveira 560 from "Sub rupibus quartzitosis, locis siccis, prope Curraes, Serra do Cipó", Minas Gerais, Brazil, collected in flower in April, 1909, and deposited in the Silveira herbarium. The typical form of the species is known only from this original collection.

PAEPALANTHUS ACCRESCENS var. **GLABRESCENS** Alv. Silv.

Bibliography: Alv. Silv., Fl. Mont. 1: 98 & 400. 1928; Moldenke, Known Geogr. Distrib. Erioc. 9 & 44. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 207. 1949; Moldenke, Résumé 94 & 485. 1959.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 62. 1928.

Silveira (1928) says of this variety "Differt a forma typica caule perbreve seu parum elongato, foliis angustioribus rigidioribusque pilis minimis uniforme ciliatis, ceterum glabris". It is based on A. Silveira 561 collected "Inter saxa quartzitosa, campis arenosis, prope Bandeirinhas, Serra do Cipó", Minas Gerais, Brazil, flowering in April, 1909, and deposited in the Silveira herbarium. Although it is not so labeled, it is obvious that Silveira's plate 62 depicts the variety, rather than the typical form of the species. He comments that "Forma typica et varietas praecipue caule accrescente et indumento ac magnibus foliorum valde distinctas".

PAEPALANTHUS ACTINOCEPHALOIDES Alv. Silv.

Bibliography: Alv. Silv., Fl. Mont. 1: 135—136 & 400, pl. 84. 1928; A. W. Hill, Ind. Kew. Suppl. 9: 199. 1938; Worsdell, Ind. Lond. Suppl. 2: 182. 1941; Moldenke, Known Geogr. Distrib. Erioc. 9 & 44. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 207. 1949; Moldenke, Résumé 94 & 485. 1959.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 84. 1928.

This species is based on A. Silveira 687, collected in fields near Diamantina, Minas Gerais, Brazil, flowering in April, 1918,

and deposited in the Silveira herbarium. Thus far the species is known only from the original collection.

PAEPALANTHUS ACULEATUS Alv. Silv.

Bibliography: Alv. Silv., Fl. Serr. Min. 65, pl. 24. 1908; Alv. Silv., Fl. Mont. 1: 270--271, pl. 179. 1928; Stapf, Ind. Lond. 4: 518. 1930; A. W. Hill, Ind. Kew. Suppl. 8: 169. 1933; Worsdell, Ind. Lond. Suppl. 2: 182. 1941; Moldenke, Known Geogr. Distrib. Erioc. 9 & 44. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 207. 1949; Moldenke, Résumé 94 & 485. 1959.

Illustrations: Alv. Silv., Fl. Serr. Min. pl. 24. 1908; Alv. Silv., Fl. Mont. 1: pl. 179. 1928.

The type of this species was collected by Álvaro Adolpho da Silveira (no. 360) in dry sandy fields near Vaccaria, in the Serra do Cipó, Minas Gerais, Brazil, in April, 1905, and is deposited in the Silveira herbarium. In his 1928 work Silveira refers to a plate "XXIII" in his 1908 work, but this is apparently an error for plate "XXIV". He notes that this species is one of those "ob bracteas involucrantibus intus glabras in subgenere 'Xeractide' distinctissimae sunt". Irwin and his associates state that the stems were about 7 cm. tall, and found the plant growing among rocks on steep slopes. Mrs. Chase also found it on open rocky steep slopes, "common from middle to summit" of the mountain, and notes "plant with a little hummock-like base formed of the dead foliage bent downward about the stem; young plants without this base; no. 9222 about as old a plant as any seen". It has been collected at altitudes of 1100 to 1200 meters, flowering in March and April.

Citations: BRAZIL: Minas Gerais: M. A. Chase 9222 (W--1282187); Irwin, Maxwell, & Wasshausen 20385 (N, Z); A. Silveira 360 (B--isotype, Z--isotype).

PAEPALANTHUS ACUMINATUS Ruhl.

Bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 214, 217, & 289. 1903; Prain, Ind. Kew. Suppl. 3: 126. 1908; Alv. Silv., Fl. Mont. 1: 401. 1928; Moldenke, Known Geogr. Distrib. Erioc. 9 & 44. 1946; Moldenke, Alph. List Cit. 2: 412 & 490 (1948) and 3: 700. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 207. 1949; Moldenke, Phytologia 3: 314 (1950) and 501. 1951; Moldenke, Résumé 94 & 485. 1959; Rennó, Levant. Herb. Inst. Agron. 69. 1960.

The type of this species was collected by Henrique Carlos de Magalhães Gomes (Herb. Com. Geogr. e Geol. 1369) in the Serra de Ibitipoca, Minas Gerais, Brazil, in June, 1896, and is deposited in the herbarium of the Botanisches Museum at Berlin where it was photographed by Macbride as his type photograph number 10569. Silveira (1928) cites a Magalhães 240 from the same locality and collected in the same month and year, so this may be a part of the type collection, and the number may actually be the collector's own field number, or, instead, a Silveira herbarium number.

Ruhland (1903) comments as follows: "A P. pilifero, ad quem maxime accedit, differt foliis latioribus, densius pilosis, bracteis involucrantibus multo longioribus, florum partibus multo saturatius (fusce) coloratis, pilis hyalinis, apice non clavatis (ut in P. pilifero) etc."

Additional citations: BRAZIL: Minas Gerais: H. C. de Magalhães Gomes, Com. Geogr. & Geol. 1369 [Herb. Marie-Victorin 15831; Macbride photos 10569] (B—type, N—photo of type, N—photo of type, N—photo of isotype, W—photo of type, Z—isotype).

PAEPAIANTHUS ACUMINATUS var. LONGIPILOSUS Moldenke

Bibliography: Moldenke, Phytologia 3: 314. 1950; Mendes Magalhães, Anais V Reun. Anual Soc. Bot. Bras. 242—243 & 303. 1956; Moldenke, Résumé 94 & 485. 1959; Renné, Levant. Herb. Inst. Agron. 69. 1960.

This plant has been collected in anthesis from January to April and has been found growing at 1000 meters altitude.

Citations: BRAZIL: Minas Gerais: Mello Barreto 15011 [Herb. Jard. Bot. Belo Horiz. 45180] (N—type); L. B. Smith 7040 (Z).

PAEPAIANTHUS ACUTALIS Alv. Silv..

Bibliography: Alv. Silv., Fl. Mont. 1: 258—259 & 401, pl. 170 [sec.]. 1928; A. W. Hill, Ind. Kew. Suppl. 9: 199. 1938; Worsdell, Ind. Lond. Suppl. 2: 182. 1941; Moldenke, Known Geogr. Distrib. Erioc. 9 & 44. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 207. 1949; Moldenke, Résumé 94 & 485. 1959.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 170 [sec.]. 1928.

The type of this species was collected by Álvaro Adolpho da Silveira (no. 689) in fields near Diamantina, Minas Gerais, Brazil, in April, 1918, and is deposited in the Silveira herbarium. Thus far, the species is known only from the original collection.

Ruhland (1903) notes "A P. Sennaeano Ruhl. pilis acutis et aliis characteribus differt".

It should be noted that Silveira's work (1928) has two plates labeled "CLXX", only the second of which represents P. acutalis. The first depicts P. chrysolepis Alv. Silv.

PAEPAIANTHUS ACUTIPILUS Alv. Silv.

Bibliography: Alv. Silv., Fl. Mont. 1: 165, 173—175, & 401, pl. 112. 1928; A. W. Hill, Ind. Kew. Suppl. 9: 199. 1938; Worsdell, Ind. Lond. Suppl. 2: 182. 1941; Moldenke, Known Geogr. Distrib. Erioc. 9 & 44. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 207. 1949; Moldenke, Résumé 94 & 485. 1959.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 112. 1928.

The type of this species was collected by Álvaro Adolpho da Silveira (no. 822) in fields near Itacambira, Minas Gerais, Brazil, in July, 1926, and is deposited in the Silveira herbarium. Silveira (1928) notes "Species a precedente [P. albiceps Alv. Silv.] valde affinis, sed pilis acutis caule piloso, etc. distinguitur".

Citations: BRAZIL: Minas Gerais: Magalhães Gomes & Schwacke 1329 [Herb. Jard. Bot. Belo Horiz. 26680] (N).

PAEPALANTHUS AEQUALIS (Vell.) J. F. Macbr.

Synonymy: Dupatya aequalis Vell., Fl. Flum. 36. 1825. Eriocaulon blepharocnemis Mart. ex Körn. in Mart., Fl. Bras. 3 (1): 376, in syn. 1863. Paepalanthus blepharophorus var. α Kunth ex Körn. in Mart., Fl. Bras. 3 (1): 376, in syn. 1863. Paepalanthus blepharocnemis Mart. ex Körn. in Mart., Fl. Bras. 3 (1): 376--377, pl. 48, fig. 3. 1863. Paepalanthus blepharocnemis var. α Körn. in Mart., Fl. Bras. 3 (1): 376 & 377. 1863. Paepalanthus blepharocnemis var. ϕ Körn. in Mart., Fl. Bras. 3 (1): 377. 1863.

Bibliography: Vell., Fl. Flum. 36 (1825) and Icon. 1: pl. 85. 1827; Kunth, Enum. Pl. 3: 580. 1841; Körn. in Mart., Fl. Bras. 3 (1): 276, 281, & 376--377, pl. 48, fig. 3. 1863; Vell., Arch. Mus. Nac. Rio Jan. 5: 36--37. 1881; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 401. 1894; Malme, Bih. Svensk. Vet. Akad. Handl. 27 (3), no. 11: 30. 1901; Ruhl. in Engl., Pflanzenreich 13 (4-30): 2, 12, 123, 128--130, [283], & 289. 1903; Alv. Silv., Fl. Mont. 1: 402. 1928; Stapf, Ind. Lond. 4: 518. 1930; Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 41. 1930; J. F. Macbr., Field Mus. Publ. Bot. 11: 43. 1931; A. W. Hill, Ind. Kew. Suppl. 9: 199. 1938; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 2: 401. 1946; Moldenke, Known Geogr. Distrib. Erioc. 9, 28, 44, & 45. 1946; Moldenke, Alph. List Cit. 1: 223 (1946), 2: 364 (1948), and 4: 1180. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 207. 1949; Moldenke, Phytologia 3: 501--502. 1951; Moldenke, Résumé 95, 279, 323, & 485. 1959; Moldenke, Résumé Suppl. 1: 19. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 2: 401. 1960; Renné, Levant. Herb. Inst. Agron. 69. 1960; Thanikaimoni, Pollen & Spores 7: 181, 183, & 186, tab. 1. 1965.

Illustrations: Vell., Fl. Flum. Icon. 1: pl. 85. 1827; Körn. in Mart., Fl. Bras. 3 (1): pl. 48, fig. 3. 1863; Thanikaimoni, Pollen & Spores 7: 183, tab. 1. 1965.

Kunth (1841) was apparently very unsure of the true identity of Vellozo's species, for he asks "Quid Dupatya aequalis et hirsuta Velloz. Flor. Flumin. 1. t. 85 et 87?" The types, of course, of Vellozo's names are no longer in existence, but P. blepharocnemis was based by Körnicke on P. Clausen 159 & 174, G. Gardner 5267, Weddell 1239, and Widgren 828, the var. α on Widgren 818.

There appear to be a smooth and a hairy form of this species — Mosén 4450 is representative of the smooth form, while Brade 5530, Regnell II.290, and Widgren 19, 828, & s.n. are definitely the hairy form.

Körnicke (1863) divides this taxon into two varieties, but not based on pubescence or the lack of it. His P. blepharocnemis var. α was characterized as "Pedunculis folia subdupla superantibus" and is what he regarded as the typical form of P. blepharocnemis since it is the form he illustrates on pl. 48, fig. 3, for which

he gives as synonyms P. blepharocnemis Mart. and P. blepharophorus var. α Kunth, and for which he cites P. Clausen 159, G. Gardner 5267, Sellow s.n. [prope Ouro Preto], and Weddell 1239, all from Minas Gerais. His P. blepharocnemis var. ϕ was characterized as "Pedunculis folia subaequantibus vel iis brevioribus" and for this he gives Dupatya aequalis Vell. as a synonym and cites R. E. Pohl s.n. [prope Barbacena] and Widgren 818 from Minas Gerais and Regnell s.n. [prope Mugy] and L. Riedel 1474 from São Paulo. Ruhland (1903) does not recognize these varieties, citing all the above-mentioned collections for what he called P. blepharocnemis Mart. with the addition of Glaziou 15555 from Minas Gerais and Glaziou 17849, Lund s.n., and Schwacke 6559 from São Paulo. Körnicker's unnumbered Regnell collection is doubtless the same as the Regnell II.290 cited by Ruhland.

It should be noted here that Kunth (1841) actually does not propose any var. α as is claimed by Körnicker (1863), Ruhland (1903), and other later writers. He only describes a Paepalanthus blepharophorus and a var. ϕ . The variety is characterized by him as "humilis; foliis pedunculos subaequantibus" and for it he cites Eriocaulon blepharophorum Bong. "in Act. Petrop. 6. l. 626. 2. 220, 7. 16" as a synonym and cites no collector but gives the phrase "in paludibus, Serra da Lapa", so one may assume that he refers here to the original Riedel collection cited by Bongard. It would appear from this that Kunth's Paepalanthus blepharophorus ϕ humilis is a synonym of the true P. blepharophorus (Bong.) Kunth, while what he described as the true P. blepharophorus and which later authors have ascribed to him as "var. α " is P. blepharocnemis. For this he states that the peduncles "folia duplo superantibus" and cites Sellow s.n. [prope Villa Rica].

Paepalanthus aequalis has been found growing in dry grassy fields, rocky ground, and at lakesides, at altitudes of 1600 to 1870 meters, flowering in April and September to November. Silveira (1928) cites A. Silveira 241 from the Serra do Ouro Branco, Minas Gerais, collected in 1908.

Material has been misidentified and distributed in herbaria under the name, P. tuberosus Kunth. The species bears great similarity, at least habitally, to P. cachambuensis Alv. Silv.

Additional citations: BRAZIL: Minas Gerais: P. Clausen 159 (Br), 174 (Br, N--photo, Z--photo); G. Gardner 5267 (N); Glaziou 15555 (Br); Mello Barreto 2565 [Herb. Jard. Bot. Belo Horiz. 8247] (N), 4669 [Herb. Jard. Bot. Belo Horiz. 17525] (N), 5180 [Herb. Jard. Bot. Belo Horiz. 18126] (N); Mosén 4450 (S, S); Regnell II. 290 [6/10/1815] (W--200756), II.290 [30/9/1869] (Er, S, S); Sellow B.1293 (Br), B.1293/C.267 (B, B); Weddell 1239 [35] (Br, N--photo, Z--photo); Widgren 19 (S), 818 (Ut--346), 828 (S), s.n. [1845] (S, S, S, W--936243), s.n. (S). São Paulo: Brade 5530 (S), 12230 (S);

Leite s.n. [V.1950] (N); Segadas-Vianna 2689 [Lev. Fitosociol. 510430-0103] (Ja). MOUNTED ILLUSTRATIONS: Mart., Fl. Bras. 3 (1): pl. 48, fig. 3 (B); drawings & notes by Körnicke (B).

PAEPALANTHUS AEREUS Alv. Silv.

Synonymy: Paepalanthus aereus Alv. Silv. ex Moldenke, Known Geogr. Distrib. Erioc. 44, sphalm. 1946. Paepalanthus oereus Alv. Silv. ex Moldenke, Résumé 327, in syn. 1959.

Bibliography: Alv. Silv., Fl. Mont. 1: 161--162 & 401, pl. 102. 1928; A. W. Hill, Ind. Kew. Suppl. 9: 199. 1938; Worsdell, Ind. Lond. Suppl. 2: 182. 1941; Moldenke, Known Geogr. Distrib. Erioc. 9 & 44. 1946; Moldenke, Phytologia 2: 379 & 380. 1947; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 207. 1949; Moldenke, Résumé 95, 323, 327, & 485. 1959.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 102. 1928.

The type of this species was collected by Álvaro Adolpho da Silveira (no. 585) among quartzite rocks at Pedreira do Guara, in the Serra do Cabral, Minas Gerais, Brazil, in January, 1910, and is deposited in the Silveira herbarium. Silveira (1928) notes that "Species a P. dasynemate Ruhl. affinis, sed vaginis pubescentibus, pedunculis glabris facile distincta".

PAEPALANTHUS ALBESCENS Alv. Silv.

Bibliography: Alv. Silv., Fl. Mont. 1: 229--230 & 401, pl. 152. 1928; A. W. Hill, Ind. Kew. Suppl. 9: 199. 1938; Worsdell, Ind. Lond. Suppl. 2: 182. 1941; Moldenke, Known Geogr. Distrib. Erioc. 9 & 44. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 207. 1949; Moldenke, Résumé 95 & 485. 1959.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 152. 1928.

The type of this species was collected by Joaquim Gomes Michaeli in sandy fields near Bareiras, in the Serra Geral, Minas Gerais, Brazil, in November, 1923, and is number 333 in the Silveira herbarium. On page 401 of his work, Silveira (1928) cites his herbarium number 33, collected in the same mountains in 1922. Whether this is a misprint, a correction, or an additional collection is not clear. He notes "Species a P. villosa Mart. valde proxima, sed foliis supra viridibus (non pruinosis) bracteis involucrentibus ciliatis, pilis pedunculorum bractearumque basi non bulbosis distinguenda".

PAEPALANTHUS ALBICEPS Alv. Silv.

Bibliography: Alv. Silv., Fl. Mont. 1: 172--173 & 401, pl. 111. 1928; A. W. Hill, Ind. Kew. Suppl. 9: 199. 1938; Worsdell, Ind. Lond. Suppl. 2: 182. 1941; Moldenke, Known Geogr. Distrib. Erioc. 9 & 44. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 208. 1949; Moldenke, Résumé 95 & 485. 1959.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 111. 1928.

The type of this species, and the only known collection of it, was gathered by Álvaro Adolpho da Silveira (no. 827) in fields near Grão Mogol, Minas Gerais, Brazil, in July, 1926, and is deposited in the Silveira herbarium. In his original description

of this plant, Silveira (1928) describes the leaves as "1-2 cm. medio lata", but this is surely a typographic error for "mm."

PAEPALANTHUS ALBO-TOMENTOSUS Herzog

Bibliography: Lützelb., Estud. Bot. Nordeste 3: 148. 1923; Herzog in Fedde, Report. Sp. Nov. 20: 83. 1924; A. W. Hill, Ind. Kew. Suppl. 7: 174. 1929; Moldenke, Known Geogr. Distrib. Erioc. 10 & 44. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 208. 1949; Moldenke, Phytologia 3: 502. 1951; Moldenke, Résumé 95 & 485. 1959; Moldenke, Résumé Suppl. 12: 11. 1965.

This species was based on Lützelburg 488 from "Carrasco-Gebiet, Bom Jesus" and Lützelburg 279 from Rio Bromado in the Serra das Almas, Bahia, Brazil, collected at altitudes of 1000 to 1500 meters and deposited in the herbarium of the Botanische Staatssammlung at Munich. Macbride photographed the latter specimen at Munich as his type photograph number 18692. Herzog (1924) comments "Eine durch die weissfilzige Behaarung der Blätter und Scheiden schon ausserlich ausgezeichnete Art! Charakteristisch sind ferner die grau behaarten Hullbrakteen, die linealische Form der kurzen Blümentragblätter und das aufgesetzte Spitzchen der Kelchblätter. Gestielte ♀ und ♂ Blüten vervollständigen die Summa der leichte fassbaren Merkmale. Dem P. Klotzschianus Koern. offenbar sehr nahe stehend, aber durch die Art des Indumentes, die riemenartig-schmalen stumpfen Blätter, die längeren Scheiden und die Form der Bracteae stipentes wohl gut unterschieden."

Additional citations: BRAZIL: Bahia: A. P. Duarte 5940 [Herb. Jard. Bot. Rio Jan. 113030] (Bd—15441), 6826 (Bd—24230); Lützelburg 279 [Macbride photos 18692] (N—photo of cotype, N—photo of cotype, W—photo of cotype).

PAEPALANTHUS ALBO-VAGINATUS Alv. Silv.

Bibliography: Alv. Silv., Fl. Mont. 1: 233—234 & 401, pl. 155. 1928; A. W. Hill, Ind. Kew. Suppl. 9: 199. 1938; Warsdell, Ind. Lond. Suppl. 2: 182. 1941; Moldenke, Known Geogr. Distrib. Erioc. 10 & 44. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 208. 1949; Moldenke, Phytologia 3: 502. 1951; Angely, Fl. Paran. 10: 12 & 14 (1957) and 12: 9. 1958; Moldenke, Résumé 95, 420, & 485. 1959; Angely, Fl. Paran. 16: 66 (1960) and 17: 24. 1961; Angely, Fl. Anal. Paran., ed. 1, 200. 1965.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 155. 1928.

The type of this pretty species was collected by Dr. Joaquim Gomes Michaeli "In Serra das Furnas (in vicinia ex Serra do Monte Negro), prope rivulo Guaricanga", Paraná, Brazil, in February, 1916, and is number 610 in the Silveira herbarium. On page 401 of Silveira's work (1928) he cites this same herbarium number 610 as from the Serra do Cipó in Minas Gerais, collected in 1915. Apparently this is erroneous. It seems unlikely that a species otherwise known only from southernmost Brazil would be found also in the Serra do Cipó of Minas Gerais.

The species has been found growing at altitudes of 840 to 1400

meters, flowering and fruiting in August, September, and November. The Dusén 6868 collection in the Stockholm herbarium is annotated as "n. sp. aff. P. spixianus" in an unknown hand. Silveira notes (1928) "Ob vaginas albo-membranaceas ab affinibus haec species distinguitur".

Additional citations: BRAZIL: Paraná: Braga s.n. [2/9/59; Herb. Inst. Hist. Nat. 5270] (Mm); Braga & Lange s.n. [30/8/59; Herb. Inst. Hist. Nat. 5272] (Mm); Dombrowski 1981 [Kuniyoshi 1706] (Rf); Duarte & Hatschbach s.n. [A. P. Duarte 5378; Herb. Brade. 13915] (Lw); Dusén 1031a (S), 6868 (S, S), 8568 (S), 15586 (S, S); Hatschbach 3759 (Z), 7302 (Ca), 22145 (Rf), 22800 (Ac); Hatschbach & Duarte 7123 (Ca); Jönsson 1031a (S), 1096a (S); Pabat 5928 [E. Pereira 6101; Herb. Brade. 21965] (Lw), 5933 [E. Pereira 6106] (Bd—21964). Santa Catarina: Reitz & Klein 4781 (Ok), 5300 (Ok); Smith & Klein 7400 (N, Ok), 8467 (Ok).

PAEPALANTHUS ALBO-VILLOSUS Alv. Silv.

Synonymy: Paepalantus albo-villosus Alv. Silv., Fl. Mont. 1: pl. 15, sphalm. 1928. Paepalanthus albovillosus Alv. Silv. apud Worsdell, Ind. Lond. Suppl. 2: 183. 1941.

Bibliography: Alv. Silv., Fl. Mont. 1: 33—34 & 401, pl. 15. 1928; A. W. Hill, Ind. Kew. Suppl. 9: 199. 1938; Moldenke, Known Geogr. Distrib. Erioc. 10 & 44. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 208. 1949; Moldenke, Résumé 95 & 485. 1959; Rennó, Levant. Herb. Inst. Agron. 69. 1960.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 15. 1928.

The type of this species was collected by Álvaro Adolpho da Silveira (no. 1769) in sandy fields between Serro and Diamantina, Minas Gerais, Brazil, in June, 1925, deposited in the Silveira herbarium. On page 401 of his work, however, Silveira (1928) cites a number 769 from the Serra Geral, collected in 1926; whether this is a misprint, or is a correction to the previous statement, or actually represents another collection is not clear. He comments "Species a P. pubescente Koern. proxima, sed indumento pedunculorum et bractearum involucrantium praecipue differt". The Glaziou collection cited below was annotated by Ruhland as Syngonanthus euschemus Ruhl. Probably this is a case of transposed labels during the mounting process. Glaziou 22303 appears to be a mixture with P. armeria Mart.

Citations: BRAZIL: Goiás: Glaziou 22303, in part (Br). Minas Gerais: Mendes Magalhães 435 [Herb. Jard. Bot. Belo Horiz. 34480] (N).

PAEPALANTHUS ALLEMANII C. Diogo

Bibliography: J. C. Diogo, Bol. Mus. Nac. Rio Jan. 1: [27]—28. 1923; A. W. Hill, Ind. Kew. Suppl. 9: 199. 1938; Moldenke, Known Geogr. Distrib. Erioc. 10 & 44. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 208. 1949; Anon., U. S. Dept. Agr.

Bot. Subj. Index 5: 4227. 1958; Moldenke, Résumé 95 & 485. 1959.

The type of this species was collected by Francisco Freire Allemão e Cysneiros -- in whose honor it is named -- somewhere in Ceará, Brazil, and is probably his no. 1551 as represented in the Rio de Janeiro herbarium, where the type is deposited, although no number is actually cited in the original description.

Citations: BRAZIL: Ceará: Allemão 1551 [Herb. Mus. Nac. Rio Jan. 29469; U. S. Nat. Herb. photo 5890] (N—photo of isotype, N—photo of isotype, P—isotype, S—isotype, Z—isotype, Z—photo of isotype).

PAEPALANTHUS ALPINUS Körn.

Synonymy: Dupatya alpina (Körn.) Kuntze, Rev. Gen. Pl. 2: 745. 1891. Dupatya alpina Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902.

Bibliography: Körn. in Mart., Fl. Bras. 3 (1): 408—410. 1863; Kuntze, Rev. Gen. Pl. 2: 745. 1891; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 201, 207, 208, [283], & 289. 1903; Thiseit.-Dyer, Ind. Kew. Suppl. 2: 401. 1904; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 2, 145. 1941; Moldenke, Known Geogr. Distrib. Erioc. 5, 28, & 44. 1946; Moldenke, Alph. List Cit. 1: 28 & 221 (1946), 2: 609 (1948), 3: 664 (1949), and 4: 1075 & 1078. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 60 & 208. 1949; Moldenke, Phytologia 3: 502. 1951; Moldenke, Mutisia 6: [1]—2. 1952; Uribe, Mutisia 25: 28. 1956; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 3, 145. 1959; Moldenke, Résumé 67, 279, & 485. 1959.

The type of this high alpine species was collected by Jean Jules Linden (no. 1310) in swamps between Acansipo and Choconta, in the province of Tunja, Boyacá, Colombia, in March of 1843, and is deposited in the herbarium of the Botanisches Museum at Berlin. An isotype was photographed by Macbride in the herbarium of the Conservatoire et Jardin Botaniques at Geneva and is his type photograph number 25161. The species has been found growing in swamps, bogs, llanos, and moist páramos, at altitudes of 2500 to 3700 meters, flowering in February, March, May, August, and September. Langenheim describes it as "common"; Pennell describes it as an herb with a short stout caudex; Fosberg says that the rosettes are almost acaulescent, the flowering-heads gray, "common in wet places in transition between páramo and subpáramo on sloping benches". The Galen Smith, Idrobo, Jaramillo Mejía, & Mesa-Bernal 1105 collection is most interesting because of the tough 3-parted fruits falling out of the heads in huge numbers.

Ruhland, in the index to his monograph (1903), avers that this species is referred to on page "209" of the text, but this seems to be an error for page 208. He cites only the type collection (Linden 1310) and Karsten s.n., the latter from Cundinamarca, Colombia, and deposited in the herbarium of the Naturhistorisches Museum at Vienna, the former at Berlin.

Material has been misidentified and distributed in herbaria as Eriocaulon ensifolium Humb. On the other hand, the Killip &

Ariste-Joseph 11939, distributed as P. alpinus, is actually P. andicola Körn., while García-Barriga, Schultes, & Jaramillo Mejía 13595 is P. ensifolius (H.B.K.) Kunth.

Additional citations: COLOMBIA: Boyacá: Fassett 25033 (W—2166137, Ws); Langenheim 3631 (W—2266634); Linden 1310 [Macbride photos 25161] (B—isotype, N—photo of isotype, N—photo of isotype, W—photo of isotype). Cundinamarca: Ariste-Joseph A.72 (W—888750); F. R. Fosberg 20236 (N, N); Galen Smith, Idrobo, Jaramillo Mejía, & Mesa-Bernal 1105 (N, N, W—2047459); García-Barriga 16160 (N); Grant & Fosberg 9237 [U. S. Nat. Arb. 216612] (W—2166073); Killip 34120 (S); Kölle 4647 (Cp), 5364 (Cp, Z); F. W. Pennell 2264 (F—485512, N, W—1042212); Philipson, Idrobo, & Fernandez 1285 (Bm, N, W—2026107); Sandeman 5796 (K); R. E. Schultes 1040 (N). LOCALITY OF COLLECTION UNDETERMINED: Lejeune s.n. [Am. equin.] (Br). MOUNTED ILLUSTRATIONS: drawings & notes by Körnigke (B).

PAEPALANTHUS ALSINOIDES C. Wright

Synonymy: Dupatya alsinoides (Wr. & Sauv.) Shafer ex Moldenke, Résumé 279, in syn. 1959.

Bibliography: Sauv., Anal. Acad. Ci. Habana 8: 49—50. 1871; Sauv., Fl. Cub. 163—164. 1871; Maza, Noc. Bot. Sist. 49. 1893; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 401. 1894; Urb., Symb. Ant. 1: 484. 1900; Ruhl. in Engl., Pflanzenreich 13 (4-30): 152, 154—155, & 289. 1903; Prain, Ind. Kew. Suppl. 4, pr. 1, 170. 1913; O. E. Jennings, Ann. Carnegie Mus. 11: 89, pl. 17, fig. E—H. 1917; Moldenke, N. Am. Fl. 19: 39—40. 1937; Moldenke, Phytologia 1: 332, 351, 352, 355, 357, 361, & 363. 1939; Alain, Contrib. Ocas. Mus. Hist. Nat. Coleg. La Salle 7: 47 & 114. 1946; Moldenke, Known Geogr. Distrib. Erioc. 5, 28, & 44. 1946; Moldenke, Alph. List Cit. 1: 3, 63, 91, 92, 186, 187, 190, & 298 (1946), 2: 486, 583, 649, & 651 (1948), 3: 929 (1949), and 4: 1144, 1145, & 1304. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 44 & 208. 1949; Moldenke, Phytologia 3: 502. 1951; Prain, Ind. Kew. Suppl. 4, pr. 2, 170. 1958; Moldenke, Résumé 52, 279, & 485. 1959; Moldenke, Résumé Suppl. 1: 4. 1959.

The type of this species was collected by Charles Wright (no. 3743) in sandy pinewoods near La Grifa, Vuelta de Abajo, Pinar del Río, Cuba. Ruhland (1903) cites only the type collection, and so does Urban (1900). The Alain reference (1946) in the bibliography above is sometimes cited as "1947", but Brother Alain has assured me that the work was actually issued in 1946.

Ruhland (1903) comments that "Species foliis aciculari-rigidulis. Capitulum structura illi Paepalanthi pilosi (pilis exceptis), haud dissimilis, cui inter species meridionali-americanas proxima esse videtur."

The Ekman 11254, distributed as P. alsinoides, is actually var. minimus Jennings, while C. Wright "P" is a mixture with that variety.